

1  
1  
005  
71  
1  
VPUB

3 1761 118489657

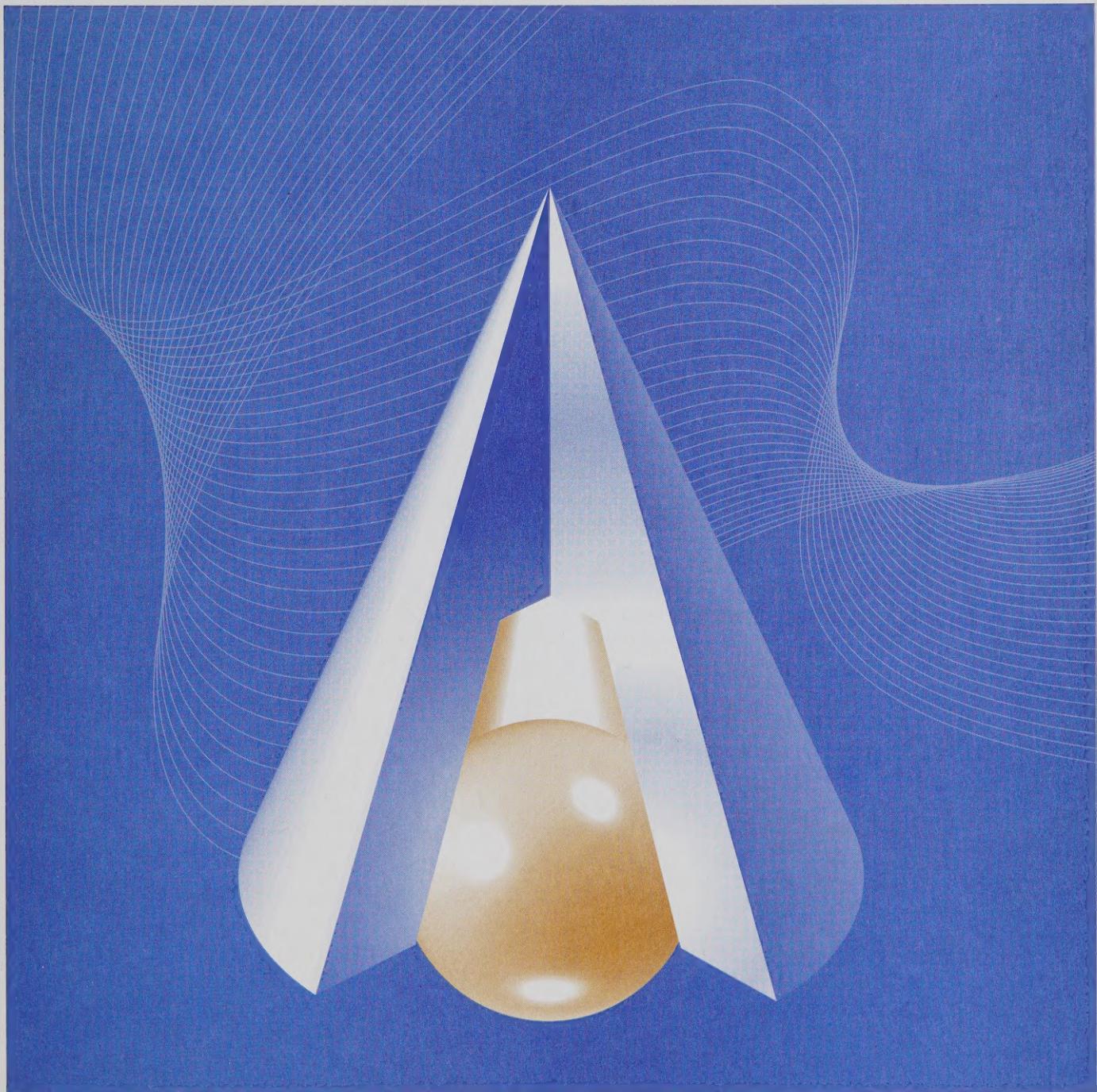
# Research Paper Series

Analytical Studies

*Mandatory Retirement Rules and Retirement Decisions of  
University Professors in Canada*

by Christopher Worswick

No. 271



Statistics  
Canada

Statistique  
Canada

Canada

## **Analytical Studies Research Paper Series**

The Analytical Studies Research Paper series provides for the circulation, on a pre-publication basis, of research conducted by Branch staff, visiting Fellows and academic associates. The Research Paper Series is intended to stimulate discussion on a variety of topics including labour, business firm dynamics, pensions, agriculture, mortality, language, immigration, statistical computing and simulation. Readers of the series are encouraged to contact the authors with comments, criticisms and suggestions. A list of titles appears at the end of this document.

Papers in the series are distributed to research institutes and specialty libraries. These papers can be downloaded from the Internet at [www.statcan.ca](http://www.statcan.ca)

Publications Review Committee  
Analytical Studies, Statistics Canada  
24th Floor, R.H. Coats Building  
Ottawa, Ontario, K1A 0T6  
(613) 951-1804  
(613) 951-1667

# **Mandatory Retirement Rules and the Retirement Decisions of University Professors in Canada**

by  
**Christopher Worswick\***

**11F0019 No. 271  
ISSN: 1205-9153  
ISBN: 0-662-42220-1**

Family and Labour Studies  
Statistics Canada

and

Carleton University  
Department of Economics

**How to obtain more information:**  
National inquiries line: 1 800 263-1136  
E-Mail inquiries: [infostats@statcan.ca](mailto:infostats@statcan.ca)

The paper is available on Internet: ([www.statcan.ca](http://www.statcan.ca))

**December 2005**

\* This project is part of the research program of the Family and Labour Studies Division, Statistics Canada. It was completed while the author was a Statistics Canada Research Fellow. The data were provided by the Culture, Tourism, and Centre for Education Statistics Division of Statistics Canada. The author has benefited from the comments and suggestions of Miles Corak, Jonathan Kesselman, Daniel Parent, Garnett Picot and Mikal Skuterud as well as the comments of seminar participants at Statistics Canada, University of British Columbia and University of Victoria.

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2005

All rights reserved. The content of this publication may be reproduced, in whole or in part, and by any means, without further permission from Statistics Canada, subject to the following conditions: that it is done solely for the purposes of private study, research, criticism, review, newspaper summary, and/or for non-commercial purposes; and that Statistics Canada be fully acknowledged as follows: Source (or "Adapted from", if appropriate): Statistics Canada, name of product, catalogue, volume and issue numbers, reference period and page(s). Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopy, for any purposes, without the prior written permission of Licensing Services, Marketing Division, Statistics Canada, Ottawa, Ontario, Canada K1A 0T6.

**Cette publication est disponible en français.**

**Note of appreciation:**

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.



Digitized by the Internet Archive  
in 2024 with funding from  
University of Toronto

<https://archive.org/details/31761118489657>

## Table of contents

I.	Introduction .....	5
II.	The relevant literature.....	5
III.	Mandatory retirement regimes in Canada .....	7
IV.	Faculty sample and summary statistics .....	7
V.	Econometric specification .....	11
VI.	Logit results .....	12
VII.	Conclusions .....	15
	Tables .....	17
	Figures .....	22
	Appendix 1 .....	27
	Appendix 2 .....	28
	References .....	29

## **Abstract**

The age distributions of professors at Canadian universities without mandatory retirement and those at universities with mandatory retirement at age 65 have diverged over time with a higher fraction of professors over the age of 65 being at universities without mandatory retirement. An analysis of a discrete time hazard model indicates that faculty members at universities with mandatory retirement at age 65 have exit rates at age 65 that are 30 to 35 percentage points higher than those of their counterparts at universities without mandatory retirement. Similar results are found for both men and women; however, the magnitude of this effect is somewhat smaller for women.

JEL Classification: J26, J45, I23.

Key Words: University, faculty, retirement.

## I. Introduction

The aging of the Canadian population has wide-ranging implications for the economy. The changing age structure has particularly strong implications for the university sector. The professors, hired initially to teach the baby boom generation, are now reaching retirement age. This aging trend is fueling an ongoing debate in provinces in which universities are allowed to enforce retirement at 65 about whether such a policy should be abolished. Consequently, it is crucial to have a complete understanding of how mandatory retirement rules affect the age distribution of professors at Canadian universities so as to fully understand the implications of banning mandatory retirement rules in the provinces in which it is currently allowed.

The analysis of this paper uses the existence of inter-provincial variation in the ability of universities to force faculty members to retire to identify the likely effect on retirement behaviour of the elimination of mandatory retirement. The data used to address these issues come from a yearly census of all university professors in Canada collected by Statistics Canada. The data set contains a university identifier as well as a person-specific identifier within a given university which allows us to follow an individual until retirement, unless that person switches employers.

The key finding of this study is that mandatory retirement rules act as a constraint on the decision to keep working beyond the age of 65 for professors at Canadian universities. The age distributions of professors at universities without mandatory retirement and those at universities with mandatory retirement at age 65 have diverged over time with a higher fraction of professors over the age of 65 being at universities without mandatory retirement. Using the longitudinal nature of the data, we see that faculty members have exit rates from the university at age 64 and 65 that are 30 to 35 percentage points lower than those of their counterparts at universities with mandatory retirement. Similar results are found for both men and women; however, the magnitude of this effect is somewhat smaller for women.

Estimated survival probabilities indicate that male faculty members employed at a university without mandatory retirement at age 64 have a 15.8 percent probability of continuing to work at the university until age 72. This indicates that while a significant fraction of professors will work past 65 if allowed to, a much smaller fraction of university professors are likely to stay many years past the usual retirement age of 65.

## II. The relevant literature

The impact of mandatory retirement rules on the retirement behaviour of university faculty members has not been studied to date in Canada. However, a number of Canadian studies have analyzed the importance of mandatory retirement rules in the broader Canadian labour market. A study by Shannon and Grierson (2004) takes advantage of the intertemporal and inter-provincial variation in mandatory retirement laws in Canada. They carry out an analysis of the impact of these rules on the retirement behaviour of older workers in the Canadian labour market using Census data from the period 1981 through 1996 and Labour

Force Survey data over the period 1976 through 2001. The authors conclude that making mandatory retirement illegal would have little effect on the size of the workforce over the age of 65. Therefore, the elimination of mandatory retirement is not seen by the authors as a way of alleviating the problems attributed to an aging population.

However, it is important to note that the Shannon and Grierson study did not explicitly look at the university faculty segment of the labour force. They argue that the number of people in the broader labour market who are actually constrained by mandatory retirement rules may be small; therefore, the effects of eliminating mandatory retirement on aggregate employment of older workers may also be small. However, one cannot necessarily extend this argument to individual segments of the Canadian labour market such as the segment of interest in this study, university professors. It may be that characteristics of the employment contracts (tenure, union status, work conditions) as well as the preferences of the professors themselves make employment past the age of 65 attractive leading to a large number of professors being constrained by mandatory retirement rules.

Due to a general lack of suitable data, the retirement decision of university faculty members has not received a great deal of attention in the economics literature. An important exception is the study by Ashenfelter and Card (2002) of U.S. faculty retirement patterns. Ashenfelter and Card (2002) provide an extensive review of the U.S. history and literature on the impact of the elimination of mandatory retirement (at age 70) in the United States. They argue that the previous U.S. research had indicated that eliminating mandatory retirement for university faculty would not have a major impact on the age distribution at U.S. universities and colleges. Their research was intended to reevaluate this view in light of newer data and using more appropriate analytical methods. The data employed by Ashenfelter and Card originate from a special survey carried out on 16,000 older faculty in the U.S. called the Faculty Retirement Survey (FRS). These data combine payroll records from individual institutions with pension information from the TIAA-CREF pension plan. The survey is based upon older faculty at a random sample of four-year colleges and universities in the mid-1980s. The faculty members are followed for 10 to 11 years overlapping the period of the elimination of mandatory retirement in the U.S. in 1994. They find strong evidence that the abolition of mandatory retirement (at the age of 70) in the United States led to a substantial increase in the fraction of university professors still working into their seventies. In particular, the retirement rates of 70- and 71-year-olds fell by two-thirds to a level comparable with those of 69-year-old faculty members. They conclude that American universities and colleges will experience a rise in the number of older professors in the future due to the elimination of mandatory retirement.

The analysis of this paper follows the approach of Ashenfelter and Card (2002) but employs much of the same variation in mandatory retirement rules in Canada as that used in the Shannon and Grierson (2004) study. The analysis sheds light on the importance of mandatory retirement rules on the retirement behaviour in the Canadian context. Data from the master files of the Full-time University Teaching Staff Data over the period 1983 to 2001 are employed in the analysis. The data contain records on each full-time teacher at each of the universities in Canada. This allows for an analysis of both the age distribution by university in Canada as well as an analysis of the exit behaviour from the university by age and institution. Given that mandatory retirement rules vary across provinces in Canada,

it is possible to identify differences in the age structure and in exit rates by age according to whether a mandatory retirement regime is in place. This provides evidence as to whether mandatory retirement rules act as constraints on the employment behaviour of older university professors by forcing them to retire at a younger age than they would in the absence of the constraints.

### **III. Mandatory retirement regimes in Canada**

In Canada, the rules related to the retirement of university professors have varied considerably both over time and across institutions. In the university sector, the rules related to retirement fall under provincial jurisdiction allowing for variation across provinces. Gunderson (2003) provides a review of the recent history related to mandatory retirement in Canada and concludes that only two provinces actually ban mandatory retirement, Manitoba and Quebec. In the case of Manitoba, the banning of mandatory retirement in 1982 resulted from a series of court cases (see Flanagan, 1985, for a detailed discussion). In the case of Quebec, mandatory retirement was banned through provincial employment standards legislation in 1983 (see also Kesselman, 2004).

However, these are not the only sources of variation in retirement rules related to age at retirement. In provinces where there is no legislative ban on mandatory retirement, individual institutions and faculty associations or unions can choose to include mandatory retirement rules in their collective agreements. In most cases, these rules stipulate that faculty members must retire before the beginning of the academic year following their 65<sup>th</sup> birthday. However, exceptions exist. The University of Saskatchewan has had mandatory retirement at age 67 over the period relevant to the data used in this study. Some institutions have had several regime changes over the period. For example, both Carleton University and York University switched from having mandatory retirement at 65 to having it at age 71 and 70, respectively, to having mandatory retirement at age 65 again by the end of the sample period.

This study focuses on differences in the probability of being employed at a university according to whether the university has either: 1) mandatory retirement at age 65 versus 2) no mandatory retirement. Given the time frame of 1983 through 2001, the main source of variation in mandatory retirement rules across professors in the data is due to inter-provincial variation in mandatory retirement rules. This variation is used to identify differences in retirement decisions between faculty members who have the option of continuing in their positions beyond the age of 65 and those who do not.

### **IV. Faculty sample and summary statistics**

Data from the master files of the Full-time University Teaching Staff Data over the period 1983 to 2001 are employed in the analysis. This confidential, administrative database is collected each year by Statistics Canada from each of the universities in Canada. It contains detailed information on each employee's salary, type of appointment (e.g., tenure and

rank), years since first appointment as well as personal information such as age, gender and education.

The data are used both cross-sectionally and longitudinally in the analysis. Each year of data represents a census of all full-time teachers at Canadian universities and is used to estimate the age distribution of different sub-populations with a particular focus on differences in these age distributions across universities with different retirement rules. Since each record in the database contains both a university identifier as well as an employee identifier, it is possible to track employees across time so long as they do not change institutions. Therefore, it is possible to generate an indicator variable for each professor that equals zero if the person remains at the institution across two adjacent years and equals one if the professor is present at the institution in the first year but is not present at the institution in the second year. This indicator variable is interpreted as capturing the exit decision of the professor. The sample employed in the analysis of these exit decisions is restricted to those full-time teachers age 58 through 71. Given the age restriction, these exits are likely to represent retirement decisions. However, some of these exits represent movements into other jobs (possibly at other Canadian universities).<sup>1</sup> It is important to note that full-time professors may drop down to a reduced teaching load without falling out of the sample. Therefore, the fact that a professor does not appear in the next year of the data does not mean that the faculty member has dropped down to part-time status. In addition, each professor on sabbatical continues to have a record in the database for the following year. Therefore, exit rates do not capture a faculty member's transition from teaching to being on an academic sabbatical.

In Appendix 1, a list of the 52 included institutions is presented. Small institutions were excluded based on having less than 100 full-time faculty members as of 2001/2002. The universities are grouped in Appendix 1 according to whether they are: 1) Medical/Doctoral, 2) Comprehensive, or 3) Primarily Undergraduate. These groupings are based on the MacLean's Magazine's annual ranking of Canadian universities taken from the 2002 publication. The first grouping can be thought of as the universities with a large research component with a medical school and extensive doctoral programs. Universities in the second group do not have medical programs and in many cases have smaller graduate programs. The third group of universities includes those with only small graduate programs and with a main focus on undergraduate teaching. The main difference between the Canadian universities covered in the 2002 MacLean's survey and those included in our sample, is the fact that the sample of professors employed in this paper includes the professors from the Université du Québec group of universities. They have been placed in the Comprehensive category since their programs seem to fit best with those of the other universities in this group. In addition, the selection of universities described in the preceding paragraph did lead to a few differences in coverage relative to the MacLean's survey in terms of the primarily undergraduate category. However, given the small number of professors at these institutions, the inclusion or exclusion of these universities is unlikely to have a significant effect on the overall empirical results.

---

1. An analysis of the propensity for professors to exit their university to be employed at another Canadian university is planned for future work.

Figures 1 to 5 contain age distributions for selected years in the sample. In Figure 1, data from 1983/1984 are employed to calculate the age distributions of professors at universities in Ontario and Quebec. In this year, all of the universities in Ontario had mandatory retirement at the age of 65 while the universities in Quebec had only eliminated mandatory retirement in that year. Therefore, this comparison is intended to be a benchmark for the comparison of similar figures for future years. We see only small differences in the age distributions. A relatively high proportion of faculty members in the 36 to 45 age range is present in the Quebec graph while Ontario has a higher proportion of faculty members in the 46 to 65 age range. Quebec only has a slightly higher fraction of faculty over the age of 65 relative to Ontario. One would expect these proportions to be similar given that the Quebec government had only eliminated mandatory retirement in 1983.

The overall patterns of the age distributions of professors at Canadian universities with mandatory retirement at 65 and those at universities without mandatory retirement are very similar to those for Ontario and Quebec, respectively. The mass of each distribution is centered around the age of 45 with only a small fraction of professors near the age of retirement. Also, differences in the post age 65 range by mandatory retirement regime appear to be small. However, given that most of the universities without mandatory retirement had only recently eliminated mandatory retirement (due to legislative changes in Manitoba in 1982 and Quebec in 1983) it is not surprising that clear differences in the post 65 part of the age distribution have not yet emerged.

In Figure 2, the equivalent age densities are presented for the year 1988/1989. The aging of the stock of professors at Canadian universities is apparent when the distributions are compared with those of Figures 1 and 2. There is a general shifting to the right of the mass of the distributions. In particular, the fraction of professors near the age of 65 rises over the 5-year period. The difference in the distributions between the Quebec and Ontario universities at age 66 and older also diverges over the 5-year period with a greater fraction of professors being over the age of 65 in Quebec compared with in Ontario. The same relationship is present when all universities with mandatory retirement at the age of 65 are compared with those without mandatory retirement. The fraction of professors over the age of 65 in universities without mandatory retirement is larger at 1.9 percent than the equivalent fraction at universities with mandatory retirement at age 65 at 0.7 percent.

In Figure 3, the same estimated distributions are presented for the academic year, 1993/1994. The mass of each distribution has continued to shift to the right indicating that the stock of professors has aged on average over the period. In addition, the difference in the proportion of faculty members over age 65 between the universities in Quebec and the universities in Ontario has risen. A similar increase in the fraction of professors over the age of 65 is apparent in Figure 6 in the age distribution for the universities without mandatory retirement. Therefore, a clear pattern emerges that the relaxation of the mandatory retirement at 65 rules has a significant impact on the fraction of professors over the age of 65. Also, the magnitude of this effect grew over the late 1980s and early 1990s as the fraction of professors over the age of 60 grew.

In Figure 4, the equivalent age distributions are plotted for the 1998/1999 academic year. The distributions are generally similar to those in Figure 3. However, each distribution

appears to have shifted further to the right with a growing fraction of professors closing in on age 65. The percentage of professors over the age of 65 at universities without mandatory retirement is higher than the equivalent percentage at universities with mandatory retirement at age 65, at 0.7 and 2.7 percent, respectively. However, this difference does not appear to have grown substantially when compared with the equivalent percentages from Figure 3. This raises the possibility that in the absence of mandatory retirement, some professors may stay on past the age of 65 but the fraction that do is not large or that they do not stay on many years beyond age 65. Given the large number of professors that are on the verge of turning 65 in universities without mandatory retirement, their retirement decisions have the potential to have a huge impact on the age structure of those universities.

In Figure 5, the age distributions are presented for the most recent academic year in the sample, 2001/2002. The fraction of professors over the age of 65 is higher in Quebec universities (3.5 percent) than in Ontario universities (1.1 percent) and higher in universities without mandatory retirement (3.4 percent) compared with those that have mandatory retirement at age 65 (0.9 percent). Of particular interest is the fact that these differences appear to have grown since the 1998/1999 year indicating that the proportion of university professors who stay on past age 65 in the absence of mandatory retirement may increase over time.

Taken together, this evidence indicates that the banning of mandatory retirement coupled with the aging of the stock of university faculty in Canada has led to important differences in the age distributions of universities without mandatory retirement relative to those with mandatory retirement at age 65. Also, given that a large fraction of the current stock of university professors will turn 65 in the next 10 years, there is the potential for even larger differences in these age distributions in the near future. In order to explore these issues, the next part of the paper reports on the results of the analysis of the exit decisions of university faculty age 58 through 71.

The calculation of exit rates for individual professors relies on the individual identifier being consistent within institutions across subsequent years. Institutions, on occasion, have changed the definitions of their individual identifiers making it impossible to match faculty members across years. A complete list of the 15 relevant institution/year pairings where it was not possible to generate exit rates for this reason is presented in Appendix 2. The total number of observations excluded is small, representing less than two percent of the sample of professor/year observations. In addition, there does not appear to be any pattern in the decision to change the person identifiers in the sense that they appear to be spread fairly evenly over time and across types of institutions. Therefore, it seems unlikely that this selection is an important issue for the analysis and these observations are excluded from the sample used in the analysis of exit rates.

In Table 1, sample means for the exit rates are presented for different age groups and by mandatory retirement regime. Over the entire sample of faculty 58 through 71, exit rates are higher for professors working in institutions with mandatory retirement at age 65 at 14.5 percent compared with 12.7 percent for professors working in institutions without mandatory retirement. At age 64, the exit rates are very similar at the two groups of

universities with a slightly lower exit rate of 11.9 percent for faculty at universities with mandatory retirement at 65 relative to 12.3 percent for faculty at universities without mandatory retirement. For each of the other age groups presented, the exits rates are higher at the institutions with mandatory retirement at 65 relative to those without mandatory retirement with the difference being especially large at age 66 at 55.6 percentage points.

These sample means are presented graphically in Figure 6. Exit rates are very similar across the 2 categories of institutions over the ages 58 through 64 but diverge sharply from age 65 onwards.<sup>2</sup> This is strong preliminary evidence that the mandatory retirement at 65 is a significant constraint on the behaviour of university professors since professors not facing this constraint have much lower exit rates over the age range 65 through 68.

The next stage of the analysis involves the estimation of a discrete time logit model of exit from employment at a university for professors age 58 through 71. Before describing the results of the analysis, sample means of key variables employed are presented in Table 2. For professors age 58 through 71, 61.0 percent are employed at universities with mandatory retirement at the age of 65, 32.2 percent are employed at universities without mandatory retirement and the remaining professors are employed at universities with mandatory retirement at other ages.<sup>3</sup> The average age of professors in the universities without mandatory retirement is approximately six months older than in the universities with mandatory retirement at the age of 65. In addition, the percentage of professors over the age of 65 at universities without mandatory retirement is 13.1 percent while only 4.1 percent of professors are over the age of 65 at universities with mandatory retirement at 65. The percentage of female faculty members is similar across the universities with mandatory retirement at 65 and those without mandatory retirement, at 13.5 and 13.2 percent, respectively. A somewhat higher percentage of professors at universities without mandatory retirement hold a Ph.D. at 73.4 percent relative to 70.6 percent at universities with mandatory retirement at 65. The breakdown by type of university indicates that mandatory retirement at 65 is somewhat more common at universities in the Medical/Doctoral category (55.7 percent versus 55.0 percent) and is much more common in the primarily undergraduate category (15.4 percent versus 2.5 percent). Finally, as discussed above, universities without mandatory retirement are predominantly in Quebec and Manitoba with much smaller representation in Ontario and no universities without mandatory retirement in the Atlantic region and British Columbia.

## V. Econometric specification

The analysis of exit rates follows the method employed by Ashenfelter and Card (2002). A logit model of exit from employment is used that has the general specification:

$$\log[P(i, j, a, t)/(1 - P(i, j, a, t))] = X(i, j, a, t)\beta + c_a(j, t) \quad (1)$$

---

2. The figures are not presented for the mandatory retirement at age 65 category after the age of 68 due to the sample size dropping below 100.

where  $P(i, j, a, t)$  is the probability that individual  $i$  employed at university  $j$  at age  $a$  in year  $t$  exits from employment at the university before the start of the following year, conditional on having remained employed up to age  $a$ ;  $X(i, j, a, t)$  contains a vector of observed characteristics of individual  $i$  and university  $j$ ;  $\beta$  is a parameter vector, and  $c_a(j, t)$  is a set of baseline exit-probability parameters for individuals at age  $a$  in year  $t$  at institution  $j$ . The baseline retirement probabilities are specified as:

$$c_a(j, t) = d_a + \Delta_a \times I[NMR_j] \quad (2)$$

where  $I[NMR_j]$  equals one if the university does not have mandatory retirement and equals zero otherwise. This specification allows for unrestricted variation by age in exit rates in institutions that have mandatory retirement at the age of 65 (captured by the  $d_a$  parameters) as well as age specific deviations from these exit rates for faculty members at institutions without mandatory retirement (captured by the  $\Delta_a$  parameters).

## VI. Logit results

In Table 3, parameter estimates are presented from a logit model of the hazard rate of exiting from employment at the university that is consistent with the logistic discrete time duration model based on the method used by Ashenfelter and Card (2002). In the first column, results are presented without controls for personal or university characteristics. The specification includes a full set of unrestricted year dummy variables as well as unrestricted age dummy variables. These age variables are also interacted with a dummy variable for professors at universities without mandatory retirement.

The coefficient on the 'age 65'/'no mandatory retirement' interaction variable is near zero and statistically insignificant indicating that the exit rates are similar between professors at this age at universities without mandatory retirement and those at universities with mandatory retirement at 65. The other coefficients on the age interaction terms are statistically significant and indicate a lower rate of exit from employment at the university for professors at universities without mandatory retirement relative to professors at universities with mandatory retirement. The logit coefficients range from -1.14 to -2.66. Near the bottom of the column, the estimated retirement rates are presented indicating that at age 65 the exit rate is 28.2 percentage points lower for professors at universities without mandatory retirement compared with those at universities with mandatory retirement at age 65.<sup>4</sup> At age 66, the difference in the retirement probabilities is even larger at 33.9 percentage points. These estimates are similar in magnitude to those found by Ashenfelter and Card (2002) in terms of the effect on retirement rates of university professors in the U.S. at the age of 70 and 71 of the elimination of mandatory retirement at age 70.

3. For example, the University of Saskatchewan had mandatory retirement for faculty members at the age of 67 over the entire sample period.

4. Following Ashenfelter and Card (2002), the retirement rates are generated using the approximation  $\Delta_a \times P_a \times (1 - P_a)$  where  $P_a$  is the average probability of exit at age  $a$  for individuals at universities with mandatory retirement at age 65.

In the second column of Table 3, results are presented from an equivalent logit model of exit from employment at the university, but where controls for personal characteristics and university characteristics are also included. In particular, a set of seven subject area dummy variables are included<sup>5</sup> as well controls for region.<sup>6</sup> In addition, controls are included for the three types of universities: 1) Medical/Doctoral, 2) Comprehensive and 3) Primarily Undergraduate, and these controls are also included as interactions with a female indicator variable. Finally, a dummy variable is included to control for whether the faculty member has a Ph.D.

In general, the pattern of results for the exit by age parameters are similar to those found in column (1). Exit rates are lower for professors at age 65 and older for faculty at universities without mandatory retirement and this effect is especially large at age 66. At the bottom of the table, the estimated mean retirement rates are also similar to those of column (1) at 29.2 and 34.6 percentage points for professors age 65 and 66, respectively. The coefficient on the interaction between the female variable and the Medical/Doctoral category are more likely to exit from employment than are men at the same category of university. Also worth noting is the fact that holding a Ph.D. is associated with a lower probability of exiting employment at the university with a coefficient of -0.3.

In column (3) of Table 3, the equivalent logit model is estimated with the inclusion of log earnings from the previous year.<sup>7</sup> The coefficient on the earnings variable is negative and significant implying a lower exit rate for professors with higher earnings. The coefficient, -0.63, has the same sign as that found by Ashenfelter and Card (2002) in a similar specification of their retirement hazard model. The other coefficients are for the most part similar to those from column (2). The coefficients on the age/no-mandatory-retirement variables are very similar to those in column (2). However, some differences are present. The coefficient on the interaction of the female variable with the Medical/Doctoral variable is no longer significant once the earnings variable is included. Also, the coefficient on the Ph.D. dummy variable drops from -0.3 to -0.25.

In Table 4, results are presented that are equivalent to those of Table 3 but for the case of male faculty members. The estimated parameters are generally similar to those found in Table 3. The same pattern of lower exit rates for professors at universities without mandatory retirement relative to universities with mandatory retirement at age 65 are found for each age group from age 64 through 68. The mean exit rates are 29 to 36 percentage points lower for male professors at universities without mandatory retirement relative to male professors at universities with mandatory retirement at age 65.

An additional column is included in Table 4 which contains the estimates from a model equivalent to that used in generating the Column (3) numbers but estimated over the sample of faculty members who received their highest degree at age 34 or older (39.4 percent of the original sample). This group is of interest because age specific exit rates for faculty at

5. The subject areas are: 1) arts, 2) mathematics and science, 3) health, 4) humanities, 5) social science, 6) agriculture and 7) engineering.

6. The regions are: 1) British Columbia, 2) Alberta, 3) Manitoba, 4) Saskatchewan, 5) Ontario, 6) Quebec, and 7) the four Atlantic provinces.

7. The earnings variables are converted into year 2000 dollars using the Consumer Price Index (CPI).

universities without mandatory retirement may be lower for professors who graduated later in life and have relatively fewer years after graduation in which to earn a return on their human capital investments. In general, the results in column (4) are very close to those found in column (3). There are differences in the point estimates; however, the magnitudes of these differences are generally small. The estimated difference in mean exit rates between faculty at universities without mandatory retirement and those with mandatory retirement at age 65 are very close to those found in column (3) at -30.1 percent versus -31.4 percent for age 65 and -35.0 percent and -37.6 percent for age 66.

In Table 5, equivalent results to those in Table 3 are presented but the exit rate hazard model is estimated over the sample of female professors. Due to the smaller sample size, it was not possible to get reliable estimates for each of the age-specific exit rate parameters. Therefore, the estimated parameters are only presented if at least 100 female faculty members are present in the sample at the relevant age. The results are generally similar to those found in Tables 3 and 4. The coefficients on the age/no-mandatory-retirement variables are generally similar in sign and magnitude to the corresponding estimates in each of the columns of Tables 3 and 4. The estimated mean exit rates at the bottom of the table imply 23.3 to 30.6 percentage points lower exit rates at age 65 and 66 for female faculty members at universities without mandatory retirement relative to their female counterparts at universities with mandatory retirement at age 65. These estimates are generally smaller in magnitude than those found in Table 4 indicating that mandatory retirement may have a smaller impact on the exit behaviour of female faculty members relative to male faculty members. This is an important finding since one of the arguments often made against mandatory retirement is that it may be an especially large constraint for women who may spend years out of the labour market in the early part of their careers caring for young children. The results from Tables 4 and 5 indicate that this may not be the case on average since the differences in exit rates between faculty at universities without mandatory retirement and those with mandatory retirement at age 65 are smaller in magnitude for female faculty relative to their male counterparts.

One possibility is that a subset of female faculty (those who finished their highest degree relatively late in their career) are greatly affected by mandatory retirement constraints while most female faculty are not. In order to explore this possibility, it is useful to compare the results of column (4) in both Table 4 and Table 5 since the sample in each case is restricted to faculty who received their highest degree at age 34 or older. The point estimates in column (4) of Table 5 are very similar to those of column (3) of Table 5 indicating that women who received their highest degree later in their working lives are not more sensitive to the presence of mandatory retirement rules relative to those women who received their highest degrees relatively early in their careers. In fact, the estimated mean exit rates at the bottom of each column are very similar in Table 5 as is also the case for the mean exit rates by age across columns (3) and (4) of Table 4. Therefore, focusing on faculty who completed their highest degree later in their career does not affect the overall finding that the exit rates of female faculty at the age of 64 and 65 do not appear to be more sensitive to the absence of mandatory retirement rules than is the case for male faculty members.

In order to gain a fuller understanding of the estimated hazard rates derived from the estimates of Tables 4 and 5, discrete hazard rates for men and women are presented in

Figure 7 and the associated survival probabilities are presented in Figure 8. The results are based on the estimated hazard models of column (2) of Tables 4 and 5. In Figure 7, male and female faculty members at institutions without mandatory retirement have much lower exit rates than their counterparts at universities with mandatory retirement at age 65. Once again, the estimated hazard rate is only plotted if at least 100 observations are available in the data to calculate the estimate; therefore, only the curve for men at universities without mandatory retirement extends beyond age 68. The survival probabilities in Figure 8 are derived from the hazard rates of Figure 7 and represent the probability of continuing employment at the same university for professors employed there at age 64. The survival probabilities are much higher for both men and women employed at universities without mandatory retirement. For men at universities without mandatory retirement, the sample size of men over the age of 65 is large enough to allow for the calculation of the survival probability through age 72. While these men have much lower exit rates than their counterparts at universities with mandatory retirement at age 65, the survival probability to age 72 is 15.8 percent. This is somewhat surprising given the fact that Ashenfelter and Card (2002) found much lower retirement rates for university faculty at age 70 and 71 after the elimination of mandatory retirement at age 70. In the Canadian case, a significant proportion of faculty will work past age 65 in the absence of mandatory retirement but a relatively small fraction of faculty will work into their early seventies. This is an important difference that deserves further investigation. It may be that other differences in institutional features between the American and Canadian academic settings lead to much earlier exit from employment in Canada relative to in the United States.

## VII. Conclusions

The implications of mandatory retirement rules on the retirement behaviour of university faculty members have been analyzed using administrative data from Statistics Canada. The age distributions of professors at universities without mandatory retirement and those at universities with mandatory retirement at age 65 have diverged over time with a higher fraction of professors over the age of 65 at universities without mandatory retirement.

An analysis of a discrete time hazard model indicates that faculty members have exit rates at age 64 and 65 that are 30 to 35 percentage points lower than those of their counterparts at universities with mandatory retirement. Similar results are found for both men and women; however, the magnitude of this effect is somewhat smaller for women. Equivalent results were found by gender group when the sample was restricted to faculty members who received their highest degree at age 34 or older indicating that duration of the remainder of the career does not appear to be an important determinant of the exit rates of either male or female faculty members over the age of 64 at universities without mandatory retirement rules.

It is important to know not only whether professors will continue to work after the age of 65 in the absence of mandatory retirement, but how long they will continue to work. At age 69, virtually no professors are employed at universities with mandatory retirement at the age of 65. For universities without mandatory retirement, close to 40 percent of professors who were employed at the age of 64 remain employed at the university.

However, for older professors at universities without mandatory retirement, the probability of continuing to work is lower. Estimated survival probabilities indicate that male faculty members employed at the age of 64 at a university without mandatory retirement only have a 15.8 percent probability of continuing to work at the university until age 72. This indicates that while many university professors will work past the age of 65 if allowed, the vast majority of them will retire by the age of 72.

**Table 1**  
**Exit rates of university professors by age (%):**  
**1983-1984 through 2000-2001**

	Mandatory retirement at 65	No mandatory retirement
Age 58 to 71	14.5 (0.02)	12.7 (0.18)
Age 64	11.9 (0.44)	12.3 (0.67)
Age 65	54.8 (0.73)	28.8 (0.99)
Age 66	84.6 (0.81)	29.0 (1.18)
Age 67	51.6 (2.82)	21.3 (1.28)
Age 68	58.4 (3.90)	28.7 (1.62)
Age 69	0	28.3 (1.97)
Age 70	0	35.7 (2.54)
Age 71	0	28.1 (3.03)

Notes: Standard errors are in parentheses.

The symbol 0 true zero or a value rounded to zero

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

**Table 2**  
**Sample means of key variables for professors age 58 to 71:**  
**1983-1984 through 2001-2002**

	All universities	Universities with mandatory retirement at 65	Universities with no mandatory retirement
Mandatory retirement at 65	61.0 (0.15)	100.0	0.0
No mandatory retirement	32.2 (0.15)	0.0	100.0
Age (years)	61.4 (0.01)	61.1 (0.01)	61.7 (0.02)
Over age 65	7.67 (0.08)	4.10 (0.08)	13.1 (0.19)
Female	13.3 (0.11)	13.5 (0.14)	13.2 (0.19)
Holds a Ph.D.	71.6 (0.14)	70.6 (0.18)	73.4 (0.24)
Medical/Doctoral university	56.7 (0.15)	55.7 (0.20)	55.0 (0.27)
Comprehensive university	32.2 (0.15)	28.5 (0.18)	41.4 (0.27)
Primarily undergraduate university	10.5 (0.10)	15.4 (0.14)	2.49 (0.09)
Newfoundland and Labrador, P.E.I., Nova Scotia and New Brunswick	9.33 (0.09)	15.3 (0.14)	0.0
Quebec	23.9 (0.13)	0.0	74.1 (0.24)
Ontario	39.4 (0.15)	59.3 (0.20)	5.63 (0.13)
Manitoba	5.32 (0.07)	0.0	10.9 (0.17)
Saskatchewan	4.63 (0.07)	1.84 (0.05)	0.0
Alberta	7.64 (0.08)	7.56 (0.11)	9.40 (0.16)
British Columbia	9.77 (0.09)	16.1 (0.15)	0.0
Sample size	103,427	63,067	33,314

Notes: Means presented as percentages unless otherwise noted. Standard errors are in parentheses.  
The percentage of universities without mandatory retirement and those with mandatory retirement do not add up to 100 percent because of the universities with other mandatory retirement ages.

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

**Table 3**  
**Parameter estimates for pooled logistic hazard model of**  
**exit from the university**

Variables	(1) No controls	(2) Controls	(3) Controls and earnings
<b>No mandatory retirement/Age interaction variables</b>			
Age 64	0.02 (0.08)	0.06 (0.09)	-0.03 (0.91)
Age 65	-1.14 (0.06)	-1.18 (0.08)	-1.23 (0.08)
Age 66	-2.66 (0.09)	-2.71 (0.10)	-2.76 (0.10)
Age 67	-1.53 (0.14)	-1.59 (0.15)	-1.57 (0.15)
Age 68	-1.38 (0.18)	-1.43 (0.19)	-1.43 (0.19)
<b>Personal/university characteristics</b>			
Primarily undergraduate university	0	0.05 (0.04)	-0.02 (0.04)
Comprehensive university	0	-0.06 (0.03)	-0.07 (0.03)
Female at medical/doctoral university	0	0.08 (0.04)	-0.01 (0.04)
Female at comprehensive university	0	0.06 (0.05)	-0.01 (0.05)
Female at primarily undergraduate university	0	0.06 (0.08)	-0.01 (0.08)
Holds a Ph.D.	0	-0.30 (0.03)	-0.25 (0.03)
Log earnings in previous year	No	No	-0.64 (0.05)
Controls for region and subject	No	Yes	Yes
<b>Implied change in mean exit behaviour (%)</b>			
At age 65	-28.2 (1.5)	-29.2 (2.0)	-30.4 (2.0)
At age 66	-33.9 (1.2)	-34.6 (1.3)	-35.2 (1.3)
Pseudo-R <sup>2</sup>	0.19	0.20	0.20
Sample size	96,913	96,381	95,704

Notes: Standard errors are in parentheses. Models are fit to retirement probabilities for ages 58 to 71 for the period 1983/84-2000/01. Individuals at universities with mandatory retirement ages other than 65 have been excluded from the sample. All models include unrestricted year dummy variables, as well as unrestricted age dummy variables on their own and interacted with the 'no mandatory retirement' dummy variable.

The symbol 0 true zero or a value rounded to zero

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

**Table 4**  
**Parameter estimates for pooled logistic hazard model of**  
**exit from the university:**  
**Results for men**

Variables	(1) No controls	(2) Controls	(3) Controls and earnings	(4) Graduated age 34 or older
<b>No mandatory retirement/Age interaction variables</b>				
Age 64	0.004 (0.08)	-0.04 (0.10)	-0.07 (0.10)	-0.03 (.015)
Age 65	-1.17 (0.06)	-1.23 (0.08)	-1.27 (0.08)	-1.21 (0.12)
Age 66	-2.68 (0.09)	-2.75 (0.11)	-2.80 (0.11)	-2.48 (0.15)
Age 67	-1.57 (0.15)	-1.64 (0.16)	-1.62 (0.16)	-1.38 (0.22)
Age 68	-1.32 (0.19)	-1.39 (0.20)	-1.39 (0.20)	-1.61 (0.28)
<b>Personal/university characteristics</b>				
Comprehensive university	0	-0.08 (0.03)	-0.08 (0.03)	-0.10 (0.44)
Primarily undergraduate university	0	0.03 (0.04)	-0.04 (0.04)	-0.003 (0.06)
Holds a Ph.D.	0	-0.29 (0.03)	-0.25 (0.03)	-0.35 (0.05)
Log earnings in previous year	No	No	-0.66 (0.05)	-0.54 (0.09)
Controls for region and subject	No	Yes	Yes	Yes
<b>Implied change in mean exit behaviour (%)</b>				
At age 65	-29.0 (1.5)	-30.4 (2.0)	-31.4 (2.0)	-30.1 (3.0)
At age 66	-36.0 (1.2)	-37.0 (1.5)	-37.6 (1.5)	-35.0 (1.7)
Pseudo-R <sup>2</sup>	0.19	0.20	0.20	0.21
Sample size	83,893	83,452	82,896	32,059

Notes: Standard errors are in parentheses. Models are fit to retirement probabilities for ages 58 to 71 for the period 1983/84-2000/01. Individuals at universities with mandatory retirement ages other than 65 have been excluded from the sample. All models include unrestricted year dummy variables, as well as unrestricted age dummy variables on their own and interacted with the 'no mandatory retirement' dummy variable.

The symbol 0 true zero or a value rounded to zero

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

**Table 5**  
**Parameter estimates for pooled logistic hazard model of**  
**exit from the university:**  
**Results for women**

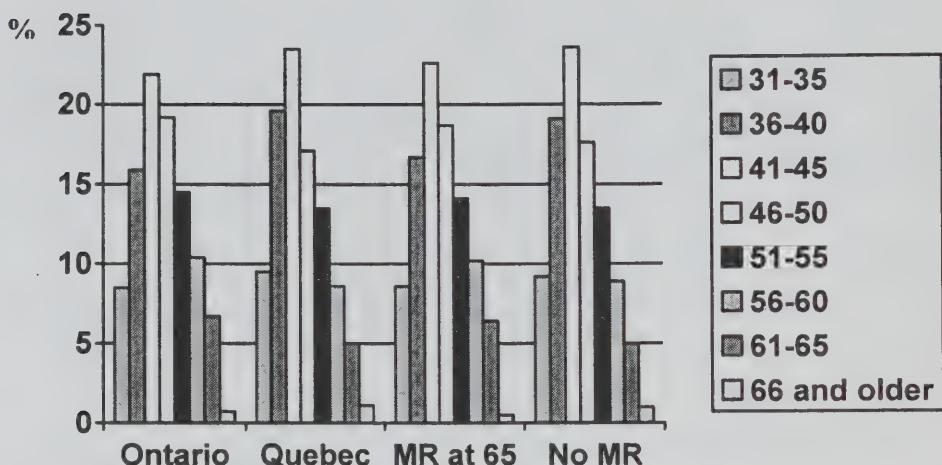
Variables	(1) No Controls	(2) Controls	(3) Controls and earnings	(4) Graduated age 34 or older
<b>No Mandatory retirement/Age interaction variables</b>				
Age 64	0.17 (0.21)	0.31 (0.25)	0.30 (0.25)	0.03 (0.32)
Age 65	-0.94 (0.16)	-0.84 (0.21)	-0.90 (0.21)	-0.87 (0.26)
Age 66	-2.54 (0.25)	-2.46 (0.28)	-2.51 (0.29)	-2.62 (0.37)
Age 67	-1.20 (0.42)	-1.23 (0.45)	-1.18 (0.45)	0
<b>Personal/university characteristics</b>				
Comprehensive university	0	0.01 (0.07)	-0.0003 (0.07)	-0.13 (0.09)
Primarily undergraduate university	0	0.12 (0.10)	0.08 (0.10)	-0.02 (0.12)
Holds a Ph.D.	0	-0.35 (0.06)	-0.29 (0.06)	-0.32 (0.08)
Log earnings in previous year	No	No	-0.56 (0.11)	-0.47 (0.15)
Controls for region and subject	No	Yes	Yes	Yes
<b>Implied change in mean exit behaviour (%)</b>				
At age 65	-23.3 (4.0)	-20.8 (5.2)	-22.3 (5.2)	-21.0 (6.3)
At age 66	-30.6 (3.0)	-29.6 (3.4)	-30.2 (3.5)	-31.5 (4.5)
Pseudo-R <sup>2</sup>	0.16	0.18	0.18	0.18
Sample size	13,020	12,929	10,573	7,915

Notes: Standard errors are in parentheses. Models are fit to retirement probabilities for ages 58 to 71 for the period 1983/1984-2000/2001. Individuals at universities with mandatory retirement ages other than 65 have been excluded from the sample. All models include unrestricted year dummy variables, as well as unrestricted age dummy variables on their own and interacted with the 'no mandatory retirement' dummy variable.

The symbol 0 true zero or a value rounded to zero

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

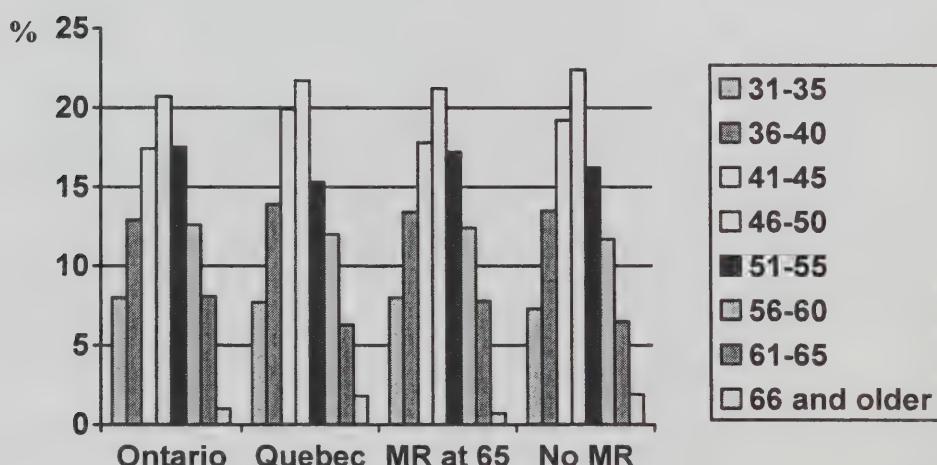
**Figure 1**  
**Age distributions of professors at Canadian universities**  
**by region and retirement rule type: 1983-1984**



MR=Mandatory Retirement.

Source: Master files of the Full-time University Teaching Staff Data.

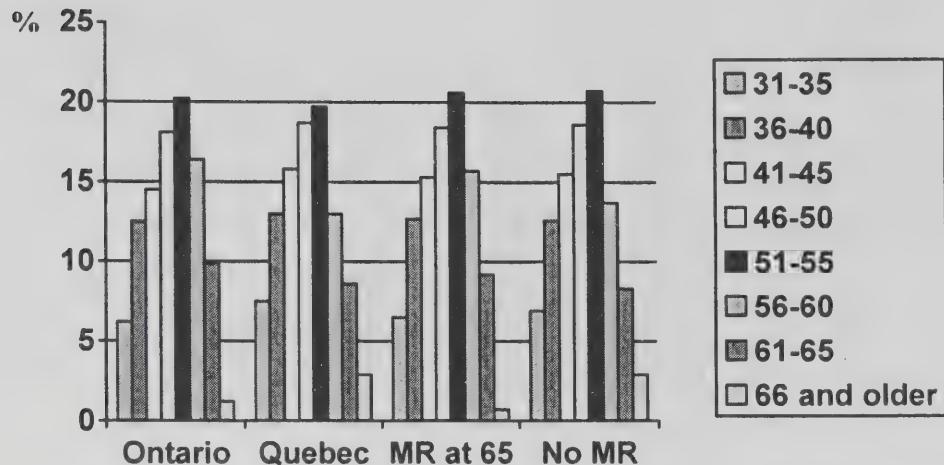
**Figure 2**  
**Age distributions of professors at Canadian universities**  
**by region and retirement rule type: 1988-1989**



MR=Mandatory Retirement.

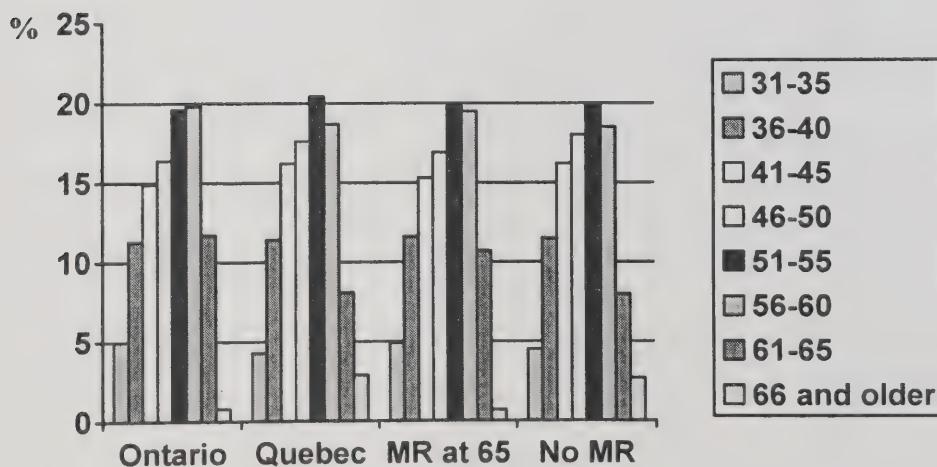
Source: Master files of the Full-time University Teaching Staff Data.

**Figure 3**  
**Age distributions of professors at Canadian universities**  
**by region and retirement rule type: 1993-1994**



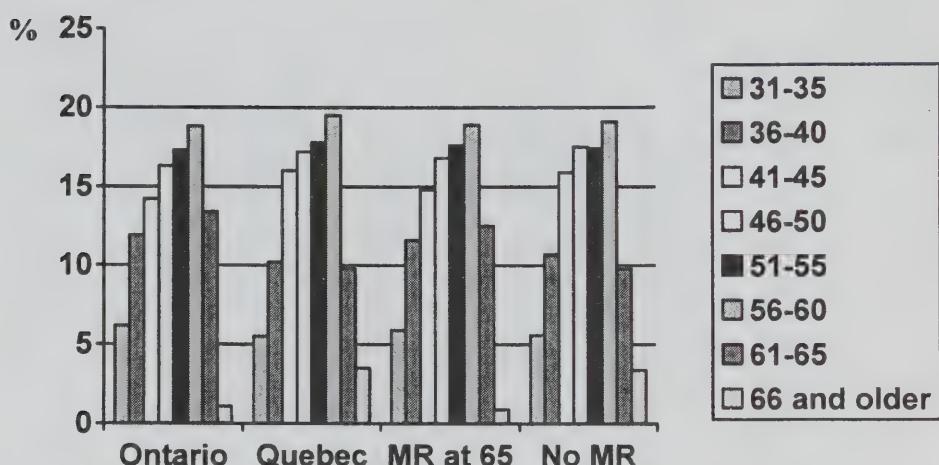
MR=Mandatory Retirement.  
Source: Master files of the Full-time University Teaching Staff Data.

**Figure 4**  
**Age distributions of professors at Canadian universities**  
**by region and retirement rule type: 1998-99**



MR=Mandatory Retirement.  
Source: Master files of the Full-time University Teaching Staff Data.

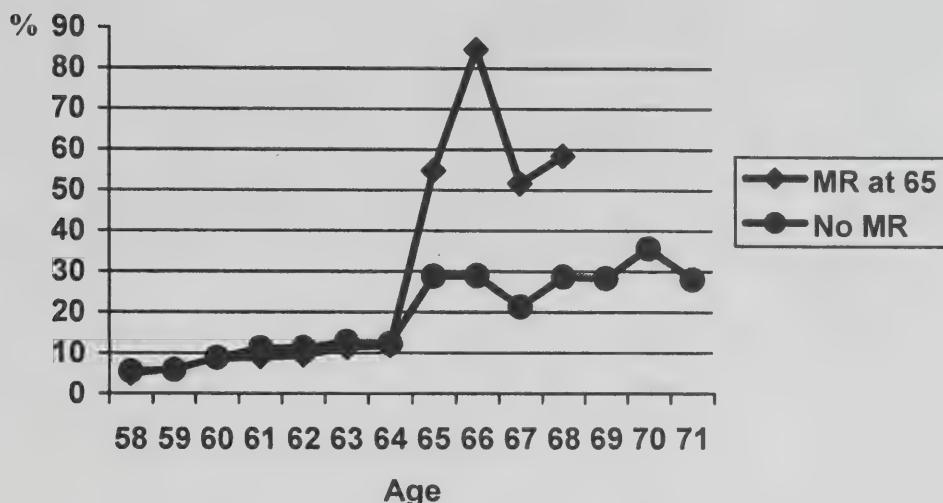
**Figure 5**  
**Age distributions of professors at Canadian universities**  
**by region and retirement rule type: 2001-2002**



MR=Mandatory Retirement.

Source: Master files of the Full-time University Teaching Staff Data.

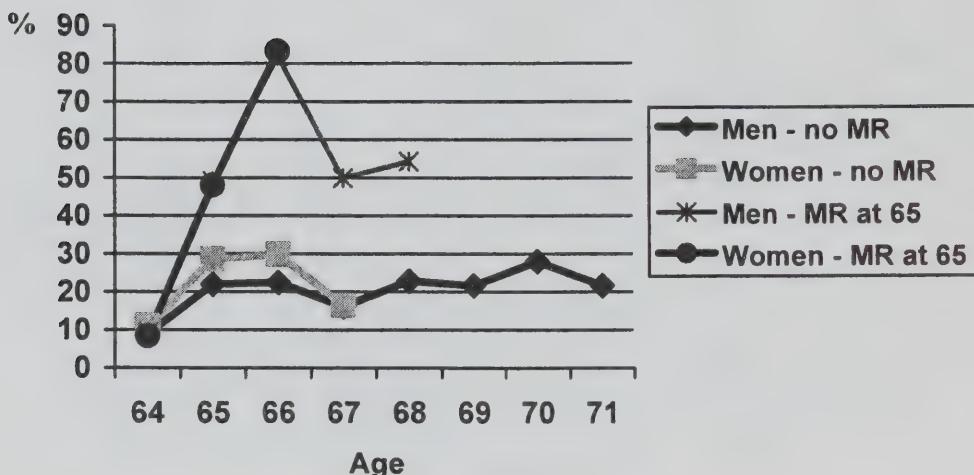
**Figure 6**  
**Exit rates of full-time professors in Canadian universities**  
**by age and retirement rule:**  
**1983-1984 through 2000-2001**



MR=Mandatory Retirement.

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

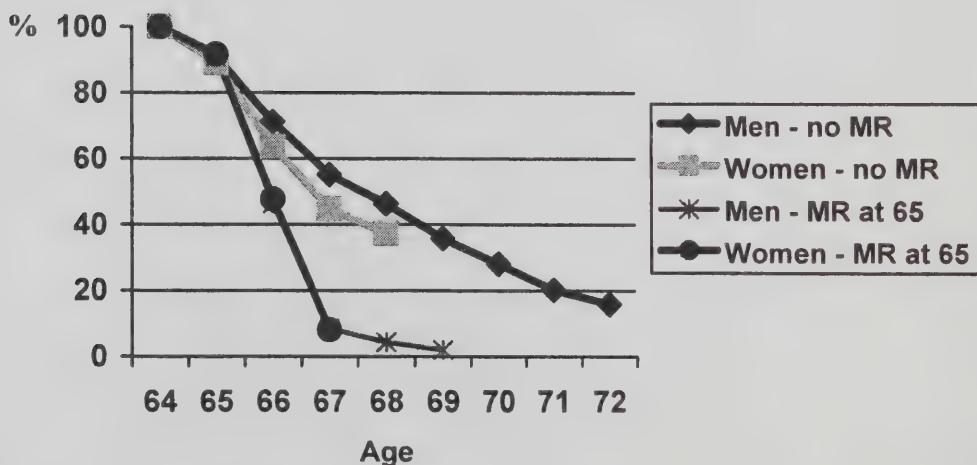
**Figure 7**  
**Discrete hazard rates for men and women:**  
**1983-1984 through 2000-2001**



MR=Mandatory Retirement.

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

**Figure 8**  
**Survival probabilities for men and women:**  
**1983-1984 through 2000-2001**



Notes: Calculated using derived hazard rates using the estimated parameters of Column (2) of Table 3 and Table 4 for women and men, respectively. The survival probabilities are based on full-time employment at the institution at age 64.  
 MR=Mandatory Retirement.

Source: Master files of the Full-time University Teaching Staff Data, 1983 to 2001.

## Appendix 1

### List of Universities:

#### **Medical/Doctoral:**

Dalhousie University  
McGill University  
Université de Montréal  
Université Laval  
Université de Sherbrooke  
McMaster University  
University of Ottawa  
Queen's University  
University of Toronto  
University of Western Ontario  
University of Manitoba  
University of Saskatchewan  
University of Alberta  
University of Calgary  
University of British Columbia

#### **Comprehensive:**

Memorial University of Newfoundland  
University of New Brunswick  
École polytechnique  
École des hautes études commerciales  
Université du Québec à Montréal  
Concordia University  
Carleton University  
University of Guelph  
University of Waterloo  
University of Windsor  
York University  
University of Regina  
Simon Fraser University  
University of Victoria

#### **Primarily Undergraduate:**

University of Prince Edward Island  
Acadia University  
Mount St. Vincent University  
St. Francis Xavier University  
Saint Mary's University  
University College of Cape Breton  
Mount Allison University  
Université de Moncton  
Bishop's University  
Université du Québec à Chicoutimi  
École de technologie supérieure  
Université du Québec à Trois-Rivières  
Université du Québec à Rimouski  
Brock University  
Lakehead University  
Laurentian University  
Trent University  
Wilfrid Laurier University  
Ryerson Polytechnic University  
Brandon University  
University of Winnipeg  
University of Lethbridge  
University of Northern British Columbia

## Appendix 2

### University/Year combinations in which person identifier not consistent across adjacent years:

Brock University	1984/85 – 1985/86
Dalhousie University	1999/00 – 2000/01
Guelph University	1993/94 – 1995/96
Laurentian University	1992/93 – 1993/94
University of Lethbridge	1992/93 – 1993/94
University of Ottawa	1996/97 – 1997/98
University of Regina	1996/97 – 1997/98
University of Victoria	1984/85 – 1985/86
University of Victoria	1994/95 – 1995/96
University of Western Ontario	1997/98 – 1998/99
University of Windsor	1999/00 – 2000/01
University of Winnipeg	1990/91 – 1991/92
University of Winnipeg	2000/01 – 2001/02
York University	1984/85 – 1985/86
York University	1985/86 – 1986/87

## References

Ashenfelter, O. and D. Card. 2002. "Did the Elimination of Mandatory Retirement Affect Faculty Retirement?" *American Economic Review*. 92, 4: 957–980.

Flanagan, T. 1985. "Policy-Making by Exegesis: The Abolition of 'Mandatory Retirement' in Manitoba." *Canadian Public Policy*. 11, 1: 40–53.

Gunderson, M. 2003. "Age Discrimination in Employment in Canada." *Contemporary Economic Policy*. 21, 3: 318–328.

Kesselman, J.R. 2004. "Challenging the Economic Assumptions of Mandatory Retirement." Discussion paper, Simon Fraser University at Habour Centre, Centre for Public Policy Research. August.

MacLean's Magazine. 2002. University Rankings Issue. November.

Shannon, M. and D. Grierson. 2004. "Mandatory Retirement and Older Worker Employment." *Canadian Journal of Economics*. 37, 3: 528–551.



**ANALYTICAL STUDIES  
RESEARCH PAPER SERIES**

No. 1 *Behavioural Response in the Context of Socio-Economic Microanalytic Simulation*, **Lars Osberg** (April 1986)

No. 2 *Unemployment and Training*, **Garnett Picot** (1987)

No. 3 *Homemaker Pensions and Lifetime Redistribution*, **Michael Wolfson** (August 1987)

No. 4 *Modeling the Lifetime Employment Patterns of Canadians*, **Garnett Picot** (Winter 1986)

No. 5 *Job Loss and Labour Market Adjustment in the Canadian Economy*, **Garnett Picot and Ted Wannell** (1987)

No. 6 *A System of Health Statistics: Toward a New Conceptual Framework for Integrating Health Data*,  
**Michael C. Wolfson** (March 1990)

No. 7 *A Prototype Micro-Macro Link for the Canadian Household Sector*, **Hans J. Adler and Michael C. Wolfson** (August 1987)

No. 8 *Notes on Corporate Concentration and Canada's Income Tax*, **Michael C. Wolfson** (October 1987)

No. 9 *The Expanding Middle: Some Canadian Evidence on the Deskilling Debate*, **John Myles** (Fall 1987)

No. 10 *The Rise of the Conglomerate Economy*, **Jorge Niosi** (1987)

No. 11 *Energy Analysis of Canadian External Trade: 1971 and 1976*, **K.E. Hamilton** (1988)

No. 12 *Net and Gross Rates of Land Concentration*, **Ray D. Bollman and Philip Ehrensaft** (1988)

No. 13 *Cause-Deleted Life Tables for Canada (1972 to 1981): An Approach Towards Analyzing Epidemiological Transition*, **Dhruva Nagnur and Michael Nagrodski** (November 1987)

No. 14 *The Distribution of the Frequency of Occurrence of Nucleotide Subsequences, Based on Their Overlap Capability*, **Jane F. Gentleman and Ronald C. Mullin** (1988)

No. 15 *Immigration and the Ethnolinguistic Character of Canada and Quebec*, **Réjean Lachapelle** (1988)

No. 16 *Integration of Canadian Farm and Off-Farm Markets and the Off-Farm Work of Women, Men and Children*,  
**Ray D. Bollman and Pamela Smith** (1988)

No. 17 *Wages and Jobs in the 1980s: Changing Youth Wages and the Declining Middle*, **J. Myles, G. Picot and T. Wannell** (July 1988)

No. 18 *A Profile of Farmers with Computers*, **Ray D. Bollman** (September 1988)

No. 19 *Mortality Risk Distributions: A Life Table Analysis*, **Geoff Rowe** (July 1988)

No. 20 *Industrial Classification in the Canadian Census of Manufactures: Automated Verification Using Product Data*,  
**John S. Crysdale** (January 1989)

No. 21 *Consumption, Income and Retirement*, **A.L. Robb and J.B. Burbridge** (1989)

No. 22 *Job Turnover in Canada's Manufacturing Sector*, **John R. Baldwin and Paul K. Gorecki** (Summer 1989)

No. 23 *Series on The Dynamics of the Competitive Process*, **John R. Baldwin and Paul K. Gorecki** (1990)

- A. Firm Entry and Exit Within the Canadian Manufacturing Sector.
- B. Intra-Industry Mobility in the Canadian Manufacturing Sector.
- C. Measuring Entry and Exit in Canadian Manufacturing: Methodology.
- D. The Contribution of the Competitive Process to Productivity Growth: The Role of Firm and Plant Turnover.
- E. Mergers and the Competitive Process.
- F. n/a
- G. Concentration Statistics as Predictors of the Intensity of Competition.
- H. The Relationship Between Mobility and Concentration for the Canadian Manufacturing Sector.

No. 24 *Mainframe SAS Enhancements in Support of Exploratory Data Analysis*, **Richard Johnson, Jane F. Gentleman and Monica Tomiak** (1989)

No. 25 *Dimensions of Labour Market Change in Canada: Intersectoral Shifts, Job and Worker Turnover*, **John R. Baldwin and Paul K. Gorecki** (1989)

No. 26 *The Persistent Gap: Exploring the Earnings Differential Between Recent Male and Female Postsecondary Graduates*, **Ted Wannell** (1989)

No. 27 *Estimating Agricultural Soil Erosion Losses From Census of Agriculture Crop Coverage Data*, **Douglas F. Trant** (1989)

No. 28 *Good Jobs/Bad Jobs and the Declining Middle: 1967-1986*, **Garnett Picot, John Myles, Ted Wannell** (1990)

No. 29 *Longitudinal Career Data for Selected Cohorts of Men and Women in the Public Service, 1978-1987*, **Garnett Picot and Ted Wannell** (1990)

No. 30 *Earnings and Death-Effects Over a Quarter Century*, **Michael Wolfson, Geoff Rowe, Jane F. Gentleman and Monica Tomiak** (1990)

No. 31 *Firm Response to Price Uncertainty: Tripartite Stabilization and the Western Canadian Cattle Industry*, **Theodore M. Horbulyk** (1990)

No. 32 *Smoothing Procedures for Simulated Longitudinal Microdata*, **Jane F. Gentleman, Dale Robertson and Monica Tomiak** (1990)

No. 33 *Patterns of Canadian Foreign Direct Investment Abroad*, **Paul K. Gorecki** (1990)

No. 34 *POHEM - A New Approach to the Estimation of Health Status Adjusted Life Expectancy*, **Michael C. Wolfson** (1991)

No. 35 *Canadian Jobs and Firm Size: Do Smaller Firms Pay Less?*, **René Morissette** (1991)

No. 36 *Distinguishing Characteristics of Foreign High Technology Acquisitions in Canada's Manufacturing Sector*, **John R. Baldwin and Paul K. Gorecki** (1991)

No. 37 *Industry Efficiency and Plant Turnover in the Canadian Manufacturing Sector*, **John R. Baldwin** (1991)

No. 38 *When the Baby Boom Grows Old: Impacts on Canada's Public Sector*, **Brian B. Murphy and Michael C. Wolfson** (1991)

No. 39 *Trends in the Distribution of Employment by Employer Size: Recent Canadian Evidence*, **Ted Wannell** (1991)

No. 40 *Small Communities in Atlantic Canada: Their Industrial Structure and Labour Market Conditions in the Early 1980s*, **Garnett Picot and John Heath** (1991)

No. 41 *The Distribution of Federal/Provincial Taxes and Transfers in Rural Canada*, **Brian B. Murphy** (1991)

No. 42 *Foreign Multinational Enterprises and Merger Activity in Canada, John Baldwin and Richard Caves (1992)*

No. 43 *Repeat Users of the Unemployment Insurance Program, Miles Corak (1992)*

No. 44 *POHEM -- A Framework for Understanding and Modeling the Health of Human Populations, Michael C. Wolfson (1992)*

No. 45 *A Review of Models of Population Health Expectancy: A Micro-Simulation Perspective, Michael C. Wolfson and Kenneth G. Manton (1992)*

No. 46 *Career Earnings and Death: A Longitudinal Analysis of Older Canadian Men, Michael C. Wolfson, Geoff Rowe, Jane Gentleman and Monica Tomiak (1992)*

No. 47 *Longitudinal Patterns in the Duration of Unemployment Insurance Claims in Canada, Miles Corak (1992)*

No. 48 *The Dynamics of Firm Turnover and the Competitive Process, John Baldwin (1992)*

No. 49 *Development of Longitudinal Panel Data from Business Registers: Canadian Experience, John Baldwin, Richard Dupuy and William Penner (1992)*

No. 50 *The Calculation of Health-Adjusted Life Expectancy for a Canadian Province Using a Multi-Attribute Utility Function: A First Attempt, J.-M. Berthelot, R. Roberge and M.C. Wolfson (1992)*

No. 51 *Testing the Robustness of Entry Barriers, J.R. Baldwin and M. Rafiquzzaman (1993)*

No. 52 *Canada's Multinationals: Their Characteristics and Determinants, Paul K. Gorecki (1992)*

No. 53 *The Persistence of Unemployment: How Important were Regional Extended Unemployment Insurance Benefits?, Miles Corak, Stephen Jones (1993)*

No. 54 *Cyclical Variation in the Duration of Unemployment Spells, Miles Corak (1992)*

No. 55 *Permanent Layoffs and Displaced Workers: Cyclical Sensitivity, Concentration, and Experience Following the Layoff, Garnett Picot and Wendy Pyper (1993)*

No. 56 *The Duration of Unemployment During Boom and Bust, Miles Corak (1993)*

No. 57 *Getting a New Job in 1989-90 in Canada, René Morissette (1993)*

No. 58 *Linking Survey and Administrative Data to Study Determinants of Health, P. David, J.-M. Berthelot and C. Mustard (1993)*

No. 59 *Extending Historical Comparability in Industrial Classification, John S. Crysdale (1993)*

No. 60 *What is Happening to Earnings Inequality in Canada?, R. Morissette, J. Myles and G. Picot (June 1994)*

No. 61 *Structural Change in the Canadian Manufacturing Sector, (1970-1990), J. Baldwin and M. Rafiquzzaman (July 1994)*

No. 62 *Unemployment Insurance, Work Disincentives, and the Canadian Labour Market: An Overview, Miles Corak (January 1994)*

No. 63 *Recent Youth Labour Market Experiences in Canada, Gordon Betcherman and René Morissette (July 1994)*

No. 64 *A Comparison of Job Creation and Job Destruction in Canada and the United States, John Baldwin, Timothy Dunne and John Haltiwanger (July 1994)*

No. 65 *What is Happening to Weekly Hours Worked in Canada?, René Morissette and Deborah Sunter* (June 1994)

No. 66 *Divergent Inequalities -- Theory, Empirical Results and Prescriptions, Michael C. Wolfson* (May 1995)

No. 67 *XEcon: An Experimental / Evolutionary Model of Economic Growth, Michael C. Wolfson* (June 1995)

No. 68 *The Gender Earnings Gap Among Recent Postsecondary Graduates, 1984-92, Ted Wannell and Nathalie Caron* (November 1994)

No. 69 *A Look at Employment-Equity Groups Among Recent Postsecondary Graduates: Visible Minorities, Aboriginal Peoples and the Activity Limited, Ted Wannell and Nathalie Caron* (November 1994)

No. 70 *Employment Generation by Small Producers in the Canadian Manufacturing Sector, John R. Baldwin and Garnett Picot* (November 1994)

No. 71 *Have Small Firms Created a Disproportionate Share of New Jobs in Canada? A Reassessment of the Facts, Garnett Picot, John Baldwin and Richard Dupuy* (November 1994)

No. 72 *Selection Versus Evolutionary Adaptation: Learning and Post-Entry Performance, J. Baldwin and M. Rafiquzzaman* (May 1995)

No. 73 *Business Strategies in Innovative and Non-Innovative Firms in Canada, J. Baldwin and J. Johnson* (February 1995)

No. 74 *Human Capital Development and Innovation: The Case of Training in Small and Medium Sized-Firms, J. Baldwin and J. Johnson* (March 1995)

No. 75 *Technology Use and Industrial Transformation: Empirical Perspectives, John Baldwin, Brent Diverty and David Sabourin* (August 1995)

No. 76 *Innovation: The Key to Success in Small Firms, John R. Baldwin* (February 1995)

No. 77 *The Missing Link: Data on the Demand side of Labour Markets, Lars Osberg* (April 1995)

No. 78 *Restructuring in the Canadian Manufacturing Sector from 1970 to 1990: Industry and Regional Dimensions of Job Turnover, J. Baldwin and M. Rafiquzzaman* (July 1995)

No. 79 *Human Capital and the Use of Time, Frank Jones* (June 1995)

No. 80 *Why Has Inequality in Weekly Earnings Increased in Canada?, René Morissette* (July 1995)

No. 81 *Socio-Economic Statistics and Public Policy: A New Role For Microsimulation Modeling, Michael C. Wolfson* (July 1995)

No. 82 *Social Transfers, Changing Family Structure, and Low Income Among Children, Garnett Picot and John Myles* (September 1995)

No. 83 *Alternative Measures of the Average Duration of Unemployment, Miles Corak and Andrew Heisz* (October 1995)

No. 84 *The Duration of Unemployment: A User Guide, Miles Corak and Andrew Heisz* (December 1995)

No. 85 *Advanced Technology Use in Manufacturing Establishments, John R. Baldwin and Brent Diverty* (November 1995)

No. 86 *Technology Use, Training and Plant-Specific Knowledge in Manufacturing Establishments, John R. Baldwin, Tara Gray and Joanne Johnson* (December 1995)

No. 87 *Productivity Growth, Plant Turnover and Restructuring in the Canadian Manufacturing Sector, John R. Baldwin* (November 1995)

No. 88 *Were Small Producers the Engines of Growth in the Canadian Manufacturing Sector in the 1980s?, John R. Baldwin* (October 1996)

No. 89 *The Intergenerational Income Mobility of Canadian Men, Miles Corak and Andrew Heisz* (January 1996)

No. 90 *The Evolution of Payroll Taxes in Canada: 1961 - 1993, Zhengxi Lin, Garnett Picot and Charles Beach* (February 1996)

No. 91 *Project on Matching Census 1986 Database and Manitoba Health Care Files: Private Households Component, Christian Houle, Jean-Marie Berthelot, Pierre David, Cam Mustard, L. Roos and M.C. Wolfson* (March 1996)

No. 92 *Technology-induced Wage Premia in Canadian Manufacturing Plants during the 1980s, John Baldwin, Tara Gray and Joanne Johnson* (December 1996)

No. 93 *Job Creation by Company Size Class: Concentration and Persistence of Job Gains and Losses in Canadian Companies, Garnett Picot and Richard Dupuy* (April 1996)

No. 94 *Longitudinal Aspects of Earnings Inequality in Canada, René Morissette and Charles Bérubé* (July 1996)

No. 95 *Changes in Job Tenure and Job Stability in Canada, Andrew Heisz* (November 1996)

No. 96 *Are Canadians More Likely to Lose Their Jobs in the 1990s?, Garnett Picot and Zhengxi Lin* (August 6, 1997)

No. 97 *Unemployment in the Stock and Flow, Michael Baker, Miles Corak and Andrew Heisz* (September 1996)

No. 98 *The Effect of Technology and Trade on Wage Differentials Between Nonproduction and Production Workers in Canadian Manufacturing, John R. Baldwin and Mohammed Rafiquzzaman* (May 1998)

No. 99 *Use of POHEM to Estimate Direct Medical Costs of Current Practice and New Treatments Associated with Lung Cancer in Canada, C. Houle, B.P. Will, J.-M. Berthelot, Dr. W.K. Evans* (May 1997)

No. 100 *An Experimental Canadian Survey That Links Workplace Practices and Employee Outcomes: Why it is Needed and How it Works, Garnett Picot, Ted Wannell* (May 1997)

No. 101 *Innovative Activity in Canadian Food Processing Establishments: The Importance of Engineering Practices, John Baldwin and David Sabourin* (November 1999)

No. 102 *Differences in Strategies and Performances of Different Types of Innovators, John R. Baldwin and Joanne Johnson* (December 1997)

No. 103 *Permanent Layoffs in Canada: Overview and Longitudinal Analysis, Garnett Picot, Zhengxi Lin and Wendy Pyper* (September, 1997)

No. 104 *Working More? Working Less? What do Canadian Workers Prefer?, Marie Drolet and René Morissette* (May 20, 1997)

No. 105 *Growth of Advanced Technology Use in Canadian Manufacturing During the 1990's, by John Baldwin, Ed Rama and David Sabourin* (December 14, 1999)

No. 106 *Job Turnover and Labour Market Adjustment in Ontario from 1978 to 1993, by Zhengxi Lin and Wendy Pyper* (1997)

No. 107 *The Importance of Research and Development for Innovation in Small and Large Canadian Manufacturing Firms, John R. Baldwin* (September 24, 1997)

No.108 *International Competition and Industrial Performance: Allocative Efficiency, Productive Efficiency, and Turbulence, John R. Baldwin and Richard E. Caves* (October 1997)

No.109 *The Dimensions of Wage Inequality among Aboriginal Peoples, Rachel Bernier* (December 1997)

No.110 *Trickling Down or Fizzling Out? Economic Performance, Transfers, Inequality and Low Income, Myles Zyblock and Zhengxi Lin* (December 10, 1997)

No.111 *Corporate Financial Leverage: A Canada - U.S. Comparison, 1961-1996, Myles Zyblock* (December 1997)

No.112 *An explanation of the Increasing Age Premium, Constantine Kapsalis* (July 1998)

No.113 *The Intergenerational Earnings and Income Mobility of Canadian Men: Evidence from Longitudinal Income Tax Data, Miles Corak and Andrew Heisz* (October, 1998)

No.114 *Foreign-Born vs Native-Born Canadians: A Comparison of Their Inter-Provincial Labour Mobility, Zhengxi Lin* (September 1998)

No.115 *Living Arrangements and Residential Overcrowding: the situation of older immigrants in Canada, 1991, K.G. Basavarajappa* (September 1998)

No.116 *What is Happening to Earnings Inequality and Youth Wages in the 1990s?, Garnett Picot* (July 1998)

No.117 *The Determinants of the Adoption Lag for Advanced Manufacturing Technologies, John R. Baldwin and Mohammed Rafiquzzaman* (August 1998)

No.118 *Labour Productivity Differences Between Domestic and Foreign-Controlled Establishments in the Canadian Manufacturing Sector, John R. Baldwin and Naginder Dhaliwal* (March 1, 2000)

No.119 *Technology Adoption: A Comparison Between Canada and the United States, John R. Baldwin and David Sabourin* (August 1998)

No.120 *Are There High-Tech Industries or Only High-Tech Firms? Evidence From New Technology-Based firms, John R. Baldwin and Guy Gellatly* (December 1998)

No.121 *A Portrait of Entrants and Exits, John R. Baldwin* (June 1999)

No.122 *Determinants of Innovative Activity in Canadian Manufacturing Firms: The Role of Intellectual Property Right, John R. Baldwin, Petr Hanel and David Sabourin* (March 7, 2000)

No.123 *Innovation and Training in New Firms John R. Baldwin* (November 2000)

No.124 *New Views on Inequality Trends in Canada and the United States, Michael C. Wolfson and Brian B. Murphy* (August 1998 and October 1999 (paper))

No.125 *Employment Insurance in Canada: Recent Trends and Policy Changes, Zhengxi Lin* (September 1998)

No.126 *Computers, Fax Machines and Wages in Canada: What Really Matters?, René Morissette and Marie Drolet* (October 1998)

No.127 *Understanding the Innovation Process: Innovation in Dynamic Service Industries, Guy Gellatly and Valerie Peters* (December 1999)

No.128 *Recent Canadian Evidence on Job Quality by Firm Size, Marie Drolet and René Morissette* (November 1998)

No.129 *Distribution, Inequality and Concentration of Income Among Older Immigrants in Canada, 1990*,  
**K.G Basavarajappa (April 1999)**

No.130 *Earnings Dynamics and Inequality among Canadian Men, 1976-1992: Evidence from Longitudinal Income Tax Records*, **Michael Baker and Gary Solon (February 1999)**

No.131 *The Returns to Education, and the Increasing Wage Gap Between Younger and Older Workers*,  
**C. Kapsalis, R. Morissette and G. Picot (March 1999)**

No.132 *Why Do Children Move Into and Out of Low Income: Changing Labour Market Conditions or Marriage and Divorce?*, **G. Picot, M. Zyblock and W. Pyper (March 1999)**

No.133 *Rising Self-Employment in the Midst of High Unemployment: An Empirical Analysis of Recent Developments in Canada*, **Zhengxi Lin, Janice Yates and Garnett Picot (March 1999)**

No.134 *The Entry and Exit Dynamics of Self-Employment in Canada*, **Zhengxi Lin, Garnett Picot and Janice Yates (March 1999)**

No.135 *Death and Divorce: The Long-term Consequences of Parental Loss on Adolescents*, **Miles Corak (June 9, 1999)**

No.136 *Cancelled*

No.137 *Innovation, Training and Success*, **John Baldwin (October 1999)**

No.138 *The Evolution of Pension Coverage of Young and Older Workers in Canada*, **René Morissette and Marie Drolet (December 1999)**

No.139 *Import Competition and Market Power: Canadian Evidence*, **Aileen J. Thompson (April 2000)**

No.140 *Gender Composition and Wages: Why is Canada Different from the United States*, **Michael Baker and Nicole Fortin (August 2000)**

No.141 *The Transition to Work for Canadian University Graduates: Time to First Job, 1982-1990*, **Julian Betts, Christopher Ferrall and Ross Finnie (December 2000)**

No.142 *Who Moves? A Panel Logit Model Analysis of Interprovincial Migration in Canada*, **Ross Finnie (August 2000)**

No.143 *Differences in Innovator and Non-Innovator Profiles: Small Establishments in Business Services*, **Guy Gellatly (December 1999)**

No.144 *Social Transfers, Earnings and Low-Income Intensity Among Canadian Children, 1981-1996: Highlighting Recent Development in Low-Income Measurement*, **John Myles and Garnett Picot (March 2000)**

No.145 *How Much of Canada's Unemployment is Structural?*, **Lars Osberg and Zhengxi Lin (October 2000)**

No.146 *To What Extent Are Canadians Exposed to Low-Income?*, **René Morissette and Marie Drolet (April, 2000)**

No.147 *The Maturation of Canada's Retirement Income System: Income Levels, Income Inequality and Low-Income among the Elderly*, **John Myles (March 6, 2000)**

No.148 *The Performance of the 1990s Canadian Labour Market*, **Garnett Picot and Andrew Heisz (April, 2000)**

No.149 *Payroll Taxes in Canada Revisited: Structure, Statutory Parameters, and Recent Trends* **Zhengxi Lin (August, 2001)**

No.150 *Patterns of Corporate Diversification in Canada: An Empirical Analysis*, **John R. Baldwin, Desmond Beckstead, Guy Gellatly and Alice Peters** (June, 2000)

No.151 *Multinationals and the Canadian Innovation Process*, **John R. Baldwin and Petr Hanel** (June, 2000)

No.152 *Rural Youth: Stayers, Leavers and Return Migrants*, **Richard Dupuy, Francine Mayer and René Morissette** (September 5, 2000)

No.153 *Female Employment Rates and Labour Market Attachment in Rural Canada*, **Euan Phimster, Esperanza Vera Toscano, Alfons Weersink** (December 2000)

No.154 *Training as a Human Resource Strategy: The Response to Staff Shortages and Technological Change*, **John R. Baldwin and Valerie Peters** (April 2001)

No.155 *Job Tenure, Worker Mobility and the Youth Labour Market during the 1990s*, **G. Picot, A. Heisz and A. Nakamura** (March 2001)

No.156 *The Impact of International Trade on the Wages of Canadians*, **Omar Zakhilwal** (December 2000)

No.157 *The Persistent Gap: New Evidence on the Canadian Gender Wage Gap*, **Marie Drolet** (December 2000)

No.158 *In Search of Intergenerational Credit Constraints Among Canadian Men: Quantile Versus Mean Regression Tests for Binding Credit Constraints*, **Nathan D. Grawe** (December 2000)

No.159 *Intergenerational Influences on the Receipt of Unemployment Insurance in Canada and Sweden*, **Miles Corak, Bjorn Gustafsson and Torun Osterberg** (December 2000)

No.160 *Neighbourhood Inequality in Canadian Cities*, **John Myles, Garnett Picot and Wendy Pyper** (December 13, 2000)

No.161 *Cancelled*

No.162 *The Evolution of Job Stability in Canada: Trends and Comparisons to U.S. Results*, **Andrew Heisz** (October 16, 2002)

No.163 *The Effects of Inter-Provincial Mobility on Individuals' Earnings: Panel Model Estimates for Canada*, **Ross Finnie** (October, 2001)

No.164 *Early Labour Market Outcomes of Recent Canadian University Graduates by Discipline: A Longitudinal, Cross-Cohort Analysis*, **Ross Finnie** (March 2002)

No.165 *Innovation and Connectivity: The Nature of Market Linkages and Innovation Networks in Canadian Manufacturing Industries*, **John Baldwin and Alice Peters** (May 2001)

No.166 *An Assessment of EI and SA Reporting in SLID*, **Constantine Kapsalis** (August, 2001)

No.167 *Cancelled*

No.168 *Enhancing Food Safety and Productivity: Technology Use in the Canadian Food Processing Industry*, **John R. Baldwin and David Sabourin** (May 2002)

No.169 *Dynamics of the Canadian Manufacturing Sector in Metropolitan and Rural Regions*, **John R. Baldwin and Mark Brown with Tara Vinodrai** (November 2001)

No.170 *Income Prospects of British Columbia University Graduates*, **Andrew Heisz** (May 2001)

No.171 *Are the Kids All Right? Intergenerational Mobility and Child Well-being in Canada*, **Miles Corak** (October 2001)

No.172 *Low-Income Intensity During the 1990s: The Role of Economic Growth, Employment Earnings and Social Transfers*, **G. Picot, R. Morissette, J. Myles** (January 24, 2003)

No.173 *Impediments to Advanced Technology Adoption for Canadian Manufacturers*, **John Baldwin and Zhengxi Lin** (August, 2001)

No.174 *Impact of the Adoption of Advanced Information and Communication Technologies on Firm Performance in the Canadian Manufacturing Sector*, **John R. Baldwin and David Sabourin** (October, 2001)

No.175 *Skill Shortages and Advanced Technology Adoption*, **David Sabourin** (September, 2001)

No.176 *Which Firms Have High Job Vacancy Rates in Canada?*, **René Morissette, Xuelin Zhang** (October 25, 2001)

No.177 *A Tale of Three Cities: The Dynamics of Manufacturing in Toronto, Montreal and Vancouver, 1976-1997*, **Tara Vinodrai** (November 2001)

No.178 *School Performance of the Children of Immigrants in Canada, 1994-98*, **Christopher Worswick** (November 14, 2001)

No.179 *Changes in the Diversification of Canadian Manufacturing Firms (1973-1997): A Move to Specialization*, **John R. Baldwin, Desmond Beckstead and Richard Caves** (February 2002)

No.180 *Differences in Interprovincial Productivity Levels*, **John R. Baldwin, Jean-Pierre Maynard, David Sabourin and Danielle Zietsma** (December 2001)

No.181 *Does Parent or Child Know Best? An Assessment of Parent/Child Agreement in the Canadian National Longitudinal Survey of Children and Youth*, **Lori Curtis, Martin Dooley and Shelley Phipps** (October 23, 2002)

No.182 *Effects of Selection Criteria and Economic Opportunities on the Characteristics of Immigrants*, **by Abdurrahman Aydemir** (October 23, 2002)

No.183 *Setting up Shop: Self-Employment Amongst Canadian College and University Graduates*, **Ross Finnie, Christine Laporte, Maud-Catherine Rivard** (March 2002)

No.184 *Winners and Losers in the Labour Market of the 1990s*, **Andrew Heisz, Andrew Jackson, Garnett Picot** (February 2002)

No.185 *Do Neighbourhoods Influence Long Term Labour Market Success? A Comparison of Adults who Grew Up in Different Public Housing Projects*, **Philip Oreopoulos** (June 2002)

No.186 *Wives, Mothers and Wages: Does Timing Matter?* **Marie Drolet** (May 1, 2002)

No.187 *The Evolution of Wealth Inequality in Canada, 1984-1999*, **René Morissette, Xuelin Zhang and Marie Drolet** (February 2002)

No.188 *Management Experience and Diversity in an Aging Organization*, **Ted Wannell and Martin Gravel** (August 2002)

No.189 *The Importance of Entry to Canadian Manufacturing with an Appendix on Measurement Issues*, **John Baldwin, Desmond Beckstead and Andrée Girard** (May 2002)

No.190 *Financing Innovation in New Small Firms : Evidence From Canada*, **John R., Baldwin, Guy Gellatly and Valérie Gaudreault** (May 2002)

No.191 *Too Far to Go On? Distance to School and University Participation*, **Marc Frenette** (June 24, 2002)

No.192 *Life After Welfare: The Economic Well-Being of Welfare Leavers in Canada during the 1990s*, **Marc Frenette, Garnet Picot** (March 26, 2003)

No.193 *Plant Turnover and Productivity Growth in Canadian Manufacturing*, **John Baldwin, Wulong Gu** (April 2, 2003)

No.194 *Wage Progression of Less Skilled Workers in Canada: Evidence from the SLID (1993-1998)*, **Xuelin Zhang** (December 6, 2002)

No.195 *Do the Falling Earnings of Immigrants Apply to Self-Employed Immigrants?*, **Marc Frenette** (December 2002)

No.196 *Minorities, Cognitive Skills and the Incomes of Canadians*, **Ross Finnie and Ronald Meng** (January 24, 2003)

No.197 *The Wealth Position of Immigrant Families in Canada*, **Xuelin Zhang** (November 18, 2003)

No.198 *The Rise in Low-Income Rates Among Immigrants in Canada*, **Garnett Picot and Feng Hou** (June 19, 2003)

No.199 *Alternative Work Practices and Quit Rates: Methodological Issues and Empirical Evidence For Canada*, **René Morissette and Julio Miguel Rosa** (March 17, 2003)

No.200 *Cohort Effects in Annual Earnings by Field of Study Among British Columbia University Graduates*, **Andrew Heisz** (September 26, 2003)

No.201 *Access to College and University: Does Distance Matter?*, **Marc Frenette** (June 2003)

No.202 *Learning From Failure: Organizational Mortality and the Resource-Based View*, **S. Thornhill and R. Amit** (August 8, 2003)

No.203 *Effects of Business Cycles on the Labour Market Assimilation of Immigrants*, **Abdurrahman Aydemir** (July 31, 2003)

No.204 *Visible Minority Neighbourhood Enclaves and Labour Market Outcomes of Immigrants*, **Garnett Picot, Feng Hou** (July 9, 2003)

No.205 *Changing Trade Barriers and Canadian Firms: Survival and Exit After the Canada-U.S. Free Trade Agreement*, **Jen Baggs** (April 28, 2004)

No.206 *Neighbourhood Attainment and Residential Segregation Among Toronto's Visible Minorities*, **John Myles and Feng Hou** (July 30, 2003)

No.207 *Life cycle bias in the estimation of intergenerational earnings persistence*, **Nathan Grawe** (August 5, 2003)

No.208 *Are Investment Expectations Rational? by Chetan Dave* (December 17, 2004)

No.209 *Working Hours in Canada and the United States*, **by Andrew Heisz and Sébastien LaRochelle-Côté** (September 2003)

No.210 *Family Income and Participation in Post-Secondary Education*, **Miles Corak, Garth Lipps and John Zhao** (October 1, 2003)

No.211-214 *forthcoming*

No.215 *Will They Ever Converge?: Earnings of Immigrant and Canadian-Born Workers over the Last Two Decades*, **Marc Frenette and René Morissette** (October 8, 2003)

No.216 *How long do people live in low-income neighbourhoods?* **Marc Frenette Garnett Picot and Roger Sceviour** (January 2004)

No.217 *Corporate Financial Leverage in Canadian Manufacturing: Consequences for Employment and Inventories, Andrew Heisz and Sébastien LaRochelle-Côté* (February 2004)

No.218 *Have Permanent Layoff Rates Increased in Canada?* **René Morissette** (March 25, 2004)

No.219 *Rising income inequality amid the economic recovery of the 1990s: An exploration of three data sources, Marc Frenette, David Green and Garnett Picot* (July 9, 2004)

No.219 *REVISED: Rising Income Inequality in the 1990s: An Exploration of Three Data Sources* **Marc Frenette, David Green and Garnett Picot** (December 16, 2004)

No.220 *Factors Determining the Success or Failure of Canadian Establishments on Foreign Markets: A Survival Analysis Approach, Jean Bosco Sabuhoro and Yvan Gervais* (May 5, 2004)

No.221 *Recent immigration and the formation of visible minority neighbourhoods in Canada's large cities, Feng Hou* (July 2, 2004)

No.222 *The Deteriorating Economic Welfare of Immigrants and Possible Causes, Garnett Picot* (July 15, 2004)

No.223 *The Retirement Plans and Expectations of Non-Retired Canadians Aged 45-59, Grant Schellenberg* (June 29, 2004)

No.224 *Public Transit Use Among Immigrants, Andrew Heisz, Grant Schellenberg* (May 13, 2004)

No.225 *Explaining the Deteriorating Entry Earnings of Canada's Immigrant Cohorts: 1966-2000, by Abdurrahman Aydemir and Mikal Skuterud* (May 17, 2004)

No.226 *Family Background and Access to Post Secondary Education: What Happened over the 1990s? , Ross Finnie, Christine Laporte and Eric Lascelles* (August 18, 2004)

No.227 *A Longitudinal Analysis of Earnings Change in Canada , Charles M. Beach and Ross Finnie* (August 20, 2004)

No.228 *Neighbourhood Inequality, Relative Deprivation and Self-perceived Health Status, Feng Hou and John Myles* (September 27, 2004)

No.229 *Population Movement Into and Out of Canada's Immigrant Gateway Cities: A Comparative Study of Toronto, Montreal and Vancouver, Feng Hou and Larry S. Bourne* (September 13, 2004)

No.230 *Earnings of Couples with High and Low Levels of Education, 1980-2000, René Morissette et Anick Johnson* (October 13, 2004)

No.231 *Welfare Dynamics in Canada: The Role of Individual Attributes and Economic-Policy Variables, Ross Finnie, Ian Irvine and Roger Sceviour* (October 2004)

No.232 *Relative Wage Patterns among the Highly Educated in a Knowledge-based Economy, René Morissette, Yuri Ostrovsky and Garnett Picot* (September 29, 2004)

No.233 *Postsecondary Field of Study and the Canadian Labour Market Outcomes of Immigrants and Non-Immigrants, Arthur Sweetman and Stephan McBride* (October 28, 2004)

No.234 *Immigrant Source Country Educational Quality and Canadian Labour Market Outcomes, Arthur Sweetman* (December 15, 2004).

No.235 *The Evolution of the Gender Earnings Gap Amongst Canadian University Graduates*, **Ross Finnie and Ted Wannell** (November 30, 2004)

No.236 *forthcoming*

No.237 *Who Goes? The Direct and Indirect Effects of Family Background on Access to Post-secondary Education*, **Ross Finnie, Eric Lascelles and Arthur Sweetman** (January 18, 2005)

No.238 *The Decline of the Immigrant Homeownership Advantage: Life-Cycle, Declining Fortunes and Changing Housing Careers in Montreal, Toronto and Vancouver, 1981-2001* by **Michael Haan** (February 3, 2005)

No.239 *Are Good Jobs Disappearing in Canada?* by **René Morissette and Anick Johnson** (January 26, 2005)

No.240 *Income Inequality and Low Income in Canada: An International Perspective*, by **Garnett Picot and John Myles** (February 10, 2005)

No.241 *Ethnic Neighbourhoods and Male Immigrant Earnings Growth: 1981 through 1996*, by **Casey Warman** (February 25, 2005)

No.242 *Making the Transition: The Impact of Moving from Elementary to Secondary School on Adolescents' Academic Achievement and Psychological Adjustment*, by **Garth Lipps** (March 1, 2005)

No.243 *Participation in Post-secondary Education in Canada: Has the Role of Parental Income and Education Changed over the 1990's?* by **Marie Drolet** (February 15, 2005)

No.244 *Is Post-secondary Access More Equitable in Canada or the United States?*, by **Marc Frenette** (March 15, 2005)

No. 245 *Social Assistance Use in Canada: National and Provincial Trends in Incidence, Entry and Exit*, by **Ross Finnie, Ian Irvine, and Roger Sceviour** (May 30, 2005)

No. 246 *Summary of: Social Assistance Use in Canada: National and Provincial Trends in Incidence, Entry and Exit*, by **Ross Finnie, Ian Irvine, and Roger Sceviour** (May 30, 2005) – *Internet Only*

No. 247 *Intergenerational Impact of Immigrants' Selection and Assimilation on Health Outcomes of Children*, by **Nina Ahmed** (April 15, 2005)

No. 248 *Low-paid Work and Economically Vulnerable Families over the Last Two Decades*, by **René Morissette and Garnett Picot** (April 25, 2005)

No. 249 *Summary of: Low-paid Work and Economically Vulnerable Families over the Last Two Decades*, by **René Morissette and Garnett Picot** (April 25, 2005) – *Internet only*

No. 250 *Explaining the Increase in On-the-Job Search*, by **Mikal Skuterud** (April 29, 2005)

No. 251 *Canadian Compulsory School Laws and their Impact on Educational Attainment and Future Earnings*, by **Philip Oreopoulos** (May 19, 2005)

No. 252 *Are Immigrants Buying to Get In?: The Role of Ethnic Clustering on the Homeownership Propensities of 12 Toronto Immigrant Groups, 1996-2001* by **Michael Haan** (May 26, 2005)

No. 253 *Summary of: Are Immigrants Buying to Get In?: The Role of Ethnic Clustering on the Homeownership Propensities of 12 Toronto Immigrant Groups, 1996-2001* by **Michael Haan** (May 26, 2005) – *Internet only*

No. 254 *The Initial Destinations and Redistribution of Canada's Major Immigrant Groups: Changes over the Past Two Decades*, by **Feng Hou** (June 29, 2005)

No. 255 **Summary of: The Initial Destinations and Redistribution of Canada's Major Immigrant Groups: Changes over the Past Two Decades, by Feng Hou (June 29, 2005) – Internet only**

No. 256 *Trade Liberalization, Profitability, and Financial Leverage by Jen Baggs and James A. Brander (June 22, 2005)*

No. 257 **Summary of: Trade Liberalization, Profitability, and Financial Leverage by Jen Baggs and James A. Brander (June 22, 2005) – Internet only**

No. 258 *Tariff Reduction and Employment in Canadian Manufacturing, 1988-1994, by Sébastien LaRochelle-Côté (June 22, 2005)*

No. 259 **Summary of: Tariff Reduction and Employment in Canadian Manufacturing, 1988-1994, by Sébastien LaRochelle-Côté (June 22, 2005) – Internet only**

No. 260 *Firms, Industries, and Unemployment Insurance: An Analysis Using Employer-Employee Data from Canada, by Miles Corak and Wen-Hao Chen (June 30, 2005)*

No. 261 *All In the Family: A Simultaneous Model of Parenting Style and Child Conduct, by Peter Burton, Shelley Phipps and Lori Curtis (August 2, 2005)*

No. 262 *The Deteriorating Economic Welfare of Immigrants and Possible Causes: Update 2005, by Garnett Picot and Arthur Sweetman (June 27, 2005) – A revised version of Study No. 222, dated July 2004*

No. 263 *The Impact of Tuition Fees on University Access: Evidence from a Large-scale Price Deregulation in Professional Programs, by Marc Frenette (September 27, 2005)*

No. 264 *Summary of: The Impact of Tuition Fees on University Access: Evidence from a Large-scale Price Deregulation in Professional Programs, by Marc Frenette (September 27, 2005) – Internet only*

No. 265 *The Instability of Family Earnings and Family Income in Canada, 1986 to 1991 and 1996 to 2001, by René Morissette and Yuri Ostrovsky (November 2, 2005)*

No. 266 *Summary of: The Instability of Family Earnings and Family Income in Canada, 1986 to 1991 and 1996 to 2001, by René Morissette and Yuri Ostrovsky (November 2, 2005) – Internet only*

No. 267 *Intergenerational Earnings Mobility Among the Children of Canadian Immigrants, by Abdurraham Aydemir, Wen-Hao Chen and Miles Corak (October 25, 2005)*

No. 268 *Forthcoming*

No. 269 *Forthcoming*

No. 270 *Differences in the Distribution of High School Achievement: The Role of Class Size and Time-in-term, by Miles Corak and Darren Lauzon (November 22, 2005)*

No. 271 *Mandatory Retirement Rules and Retirement Decisions of University Professors in Canada, by Christopher Worswick (December 5, 2005)*





